PROPOSED PLAN FOR STATE MARINE SUPERFUND SITE PORT ARTHUR, TEXAS

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 6
JULY 27, 2005

THE U.S. EPA ANNOUNCES PROPOSED PLAN

PURPOSE

The purpose of this proposed plan is to:

- Identify and define the remedial alternatives evaluated by EPA to address contamination at the State Marine Superfund Site (Site).
- Present EPA's Preferred Alternative.
- Solicit public comment on the remedial action alternatives and supporting analyses, as well as on information contained in the Administrative Record.
- Provide information on how the public can be involved in the remedy selection process.

EPA PROPOSES FINAL REMEDY FOR THE STATE MARINE SITE

In this Proposed Plan, the U.S. Environmental Protection Agency (EPA) describes the proposed final remedy for the State Marine Superfund Site (Site) and provides the rationale for this preference. In addition, this Proposed Plan includes summaries of other alternatives evaluated for use at this Site. This document is issued by the U.S. Environmental Protection Agency (EPA), the lead agency for site activities, and the Texas Commission on Environmental Quality (TCEQ), the support agency. The EPA, in consultation with the TCEQ, will select a final remedy for the Site after reviewing and considering all information submitted during the 30-day public comment period. The EPA, in consultation with the TCEQ, may modify the proposed remedy or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan. The feasibility Study Report for this Site should be consulted for more detailed information on these alternatives.

The EPA is issuing this Proposed Plan as part of its public participation responsibilities under section 117(a) of the Comprehensive Environmental, Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, §300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in the Remedial Investigation, Feasibility Study, and other documents contained in the Administrative Record file for this Site. The EPA and TCEQ encourage the public to review these documents to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted at the Site.

Community Participation

The public is invited to review and comment on this Proposed Plan and the documents contained in the Administrative Record file. This Proposed Plan highlights key information from the RI and FS reports, but it is not a substitute for those or other documents contained in the Administrative Record. EPA encourages the public to review those documents to obtain more information about the Site. The Administrative Record file is available at the following information repositories:

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Port Arthur Public Library
4615 9th Avenue
Port Arthur, Texas 77642
(409) 985-8838

U.S. Environmental Protection Agency Region 6
Seventh Floor Reception Area
1445 Ross Avenue, Ste 12D13
Dallas, Texas 75202-2733
(214) 665-6427
Monday- Friday (7:30 AM to 4:30 PM)

Texas Commission on Environmental Quality
12100 Park 35 Circle
Building E, 1st Floor
Austin, Texas 78753
(512) 239-2920
Monday- Friday (8:00 AM to 5:00 PM)

During the public comment period, written comments should be submitted to:

Carlos A. Sanchez
Remedial Project Manager
EPA Region 6 (6SF-A)
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 665-8507 or 1-800-533-3508 (Toll free)

The public comment period is scheduled to begin on July 27, 2005, and end on August 25, 2005. The EPA has scheduled a public meeting on August 11, 2005, to discuss the Proposed Plan and receive comments from the community. The public meeting will be held at the West Groves Education Center, located at 5840 West Jefferson, in Groves ,Texas, beginning at 6:00 PM. A court reporter will be present to record oral comments. EPA will conduct a short presentation and afterward will be available to meet with citizens. EPA will respond to all comments received during the public comment period using a document called a Responsiveness Summary. This document will be attached to the Record of Decision (ROD) and will be made available to the public in the information repository.

SITE BACKGROUND AND DESCRIPTION

The State Marine Site is located approximately 4.5 miles east-northeast of the City of Port Arthur in Jefferson County, Texas, on Old Yacht Club Road on Pleasure Islet, a peninsula located approximately 0.5-mile southwest of the mouth of the Neches River, see Figure 1-1. Overall, the Site encompasses approximately 17 acres and is bounded to the north by the Palmer Barge Line Site (PBLS), to the west by Old Yacht Club Road, to the south by undeveloped property, and to the east by Sabine Lake.

Pleasure Islet is a manmade landmass consisting of dredge spoils generated during the construction and maintenance of the Sabine-Neches Canal, also called the Intercoastal Waterway. The canal was constructed between 1898 and approximately 1920 in the vicinity of Sabine Lake and the Neches River, between the current site location and the mainland. Between 1955 and 1957, a portion of the canal along the western side of Pleasure Islet was abandoned, and a new canal was cut along the eastern and southern sides of Pleasure Islet. Pleasure Islet was created when a land bridge was constructed across the abandoned portions of the canal, between the northern tip of Pleasure Island and the mainland. Vehicle access to the Site is limited to a single dirt road starting at the western site border along Old Yacht Club Road.

Ownership of the Pleasure Islet was transferred from the State of Texas to the City of Port Arthur, Texas, in 1955. Development of the islet and the Site began after 1957, following construction of the land bridge across the abandoned portions of the Sabine-Neches Canal. In approximately 1963, the City of Port Arthur began municipal landfill operations on the northern and central portions of the islet. Initially, the landfill consisted of a burn pit in which wastes were incinerated. By December 1969, burn operations were discontinued, and the landfill was used solely for disposal of wastes. Between 1969 and 1972, landfill disposal operations expanded to include the central and northern portions of the Site and the property north of the Site. Between 1972 and 1974, disposal activities were generally concentrated in the northern parts of the islet. In December 1974, the City of Port Arthur closed the landfill in accordance with Texas Department of Health (TDH) regulations, which required covering the entire landfill with approximately 2 ft of fine-grained fill material. The

cover material is believed to be dredge spoils that originated on the islet.

SMS operations began about 1973 under the names of State Welding and Marine Works and the Golden Triangle Shipyard. The construction of wastewater impoundments in the northwestern portion of the Site was also reported. The impoundments were reportedly unlined, earthen diked areas approximately two (2) acres in size used to store oil and wastewater from barge-cleaning operations. Inspection reports indicate that wastewater from barge-cleaning operations was directed to two ASTs and then pumped to the wastewater impoundments. Some of the oil from the tanks was diverted to an old ship (on land) that was used as an oil/water separator. Oil from the separator was collected for reuse, potentially on-site. The Site included the locations of the former wastewater impoundments, tar burn area, distillation column, and former location of the Lauren Refining Company (LRC) Tank Farm, see Figure 1-2.

The EPA proposed the State Marine Site for listing on National Priorities List (NPL) of Superfund sites on March 6,1998. On July 28, 1998, the Site was listed as Final on the NPL.

SITE CHARACTERIZATION

Previous Investigations

In 1995, the TNRCC initiated an Expanded Site Inspection (ESI) at the SMS. The objective of the TNRCC ESI was to collect sufficient data to develop an understanding of the Site contaminants and to identify the potential migration pathways, primary contaminant sources, exposure pathways, and presence of potential human health and ecological receptors. The following reports were completed as a result of the data obtained from the field work during the ESI:

- 1996 Expanded Site Investigation Report (TNRCC).
- 1997 Hazardous Ranking System Documentation Report (TNRCC).
- 1999 Technical Memorandum (CH2M HILL).

Other Investigations Adjacent to the SMS included a Preliminary Assessment (PA), a Screening Site Inspection (SSI), and an ESI were conducted immediately adjacent to the Site at the PBLS. The PBLS is located on Pleasure Islet immediately north of the SMS. These investigations did not involve collecting soil, sediment, or ground water directly from the SMS; however, some sediment data obtained from the PBLS at near-shore and offshore locations were used in the human health and ecological screening risk assessment.

Remedial Investigation

A RI was conducted by WESTON in 2001, consisting of two sampling events in the fall of 2001, where sediment samples from off-site locations in Sabine Lake and soil and ground water samples from on-site locations on the SMS were collected.

Former Wastewater Impoundments

Nine (9) surface soil samples were collected and analyzed for target analyte list (TAL) metals and target compound list (TCL) semi-volatile organic compounds (SVOCs) from the Former Wastewater Impoundments Area. Based on the comparisons to the Texas Risk Reduction Program (TRRP) Tier 1 Commercial/Industrial Protective Concentration Levels (PCLs) for soils, the following contaminants with the associated maximum reported concentrations were detected at levels exceeding GWSoil PCLs: 20.5 mg/kg antimony, 7.4 mg/kg arsenic, 534 mg/kg barium, 210 mg/kg lead, and 0.16 mg/kg mercury. The remaining TAL metals were either not detected or were detected at concentrations below Tier 1 PCLs. No TCL SVOCs were detected at levels exceeding PCLs.

Wastewater Treatment Facility

Eight (8) surface soil samples were collected and analyzed for TAL metals and TCL SVOCs from the Wastewater Treatment Facility. The following TAL metals exceeded TRRP Tier 1 Commercial/Industrial GWSoil PCLs with maximum concentrations of 10.4 mg/kg arsenic, 150 mg/kg lead, 0.98 mg/kg mercury , and 1.4 mg/kg silver. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs. No TCL SVOCs were detected at any sample location in the Wastewater Treatment Facility.

Tar Burn Area
Four (4) surface soil samples were collected and analyzed for TAL metals and TCL SVOCs from the Tar Burn Area. The following TAL metals exceeded TRRP Tier 1 Commercial/Industrial GWSoil PCLs with maximum reported concentrations of 967 mg/kg lead, 0.31 mg/kg mercury, and 1.0 mg/kg silver. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs. No TCL SVOCs were detected at concentrations exceeding risk based levels. Constituents that were detected, but did not exceed risk based levels included the following PAHs: benzo(a)pyrene, benzo(b)fluoranthene, and butylbenzylphthalate.

Aboveground Storage Tank Area
Six (6) surface soil samples were collected and analyzed for TAL metals and TCL SVOCs from the AST area. The following TAL metals exceeded TRRP Tier 1 Commercial/Industrial GWSoil PCLs with maximum concentrations of 7.9 mg/kg arsenic, 558 mg/kg lead, 0.13 mg/kg mercury, and 0.96 mg/kg silver. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs. The TCL SVOC analysis detected the following two constituents at concentrations above Tier 1 PCLs: 2.7 mg/kg benzo(a)pyrene, and 0.28 mg/kg pentachlorophenol.

Maintenance Shed Area
Five (5) surface soil samples, including one field duplicate, were analyzed for TAL metals and TCL SVOCs from the Maintenance Shed Area. The following TAL metals exceeded TRRP Tier 1 Commercial/Industrial GWSoil PCLs with maximum concentrations of 5.8 mg/kg antimony, 19 mg/kg arsenic, 290 mg/kg lead, 0.11 mg/kg mercury, and 1.6 mg/kg thallium. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs. For TCL SVOCs, no constituents were detected above laboratory quantitation limits.

Former Lauren Tank Farm Area
Six (6) surface soil samples were analyzed for TAL metals and TCL SVOCs from the Former Lauren Tank Farm Area. The following TAL metals exceeded TRRP Tier 1 Commercial/Industrial GWSoil PCLs with maximum concentrations of 26.4 mg/kg arsenic and 1030 mg/kg lead. Antimony, cadmium, copper, mercury, nickel, selenium, silver, and thallium were also detected at concentrations exceeding the GWSoil PCLs. The remaining TAL metals were either not detected or detected at concentrations below risk-based levels.

For TCL SVOCs, benzo(a)pyrene at a concentration of 5.1 mg/kg was the only constituent to exceed Tier 1 PCLs. The majority of the remaining constituents were not detected at levels above laboratory reporting requirements.

Non-source Areas
A majority of the sample locations at the Site came from areas that did not fall within the defined source areas. These sample locations were defined as non-source sample locations. A total of 66 surface soil samples were analyzed for TAL metals and TCL SVOCs from the non-source area. Arsenic and lead exceeded the TRRP Tier 1 Commercial/Industrial GWPCLs for soils with maximum reported concentrations of 48.7 mg/kg and 2040 mg/kg, respectively. Seven additional TAL metals were detected at concentrations exceeding GWSoil PCLs. These metals with the associated maximum reported concentrations included antimony (26.3 mg/kg), barium (744 mg/kg), beryllium (1.2 mg/kg), cadmium (16.4 mg/kg), copper (5480 mg/kg), mercury (0.54 mg/kg), silver (8.3 mg/kg) and thallium (2.9 mg/kg). The remaining TAL metals were either not detected or were detected at concentrations below risk-based levels.

For TCL SVOCs, three PAH compounds were detected at two locations that exceeded TOTSoilComb and/or GWSoil PCLs. These PAHs and associated concentrations included benzo(a)anthracene (24 mg/kg), benzo(b)fluoranthene (25 mg/kg) and benzo(a)pyrene (19 mg/kg). Carbazole and PCP were also detected at 7.5 mg/kg and 0.060 mg/kg, respectively, at one location, which exceeds the GWSoil PCL. The remaining TCL SVOCs were either not detected or were detected at levels below risk-based levels.

Sediment

Nine (9) intertidal sediment samples were collected

and analyzed for TAL metals and TCL SVOCs. Lead and mercury were detected at concentrations exceeding the TRRP Tier 1 Commercial/Industrial GWSoil PCLs for soils with maximum concentrations of 942 and 0.18 mg/kg, respectively. Antimony, arsenic, cadmium, and selenium were also detected at concentrations above Tier 1 PCLs. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs.

For the TCL SVOCs, Pentachlorophenol (PCP) exceeded the TRRP Tier 1 Commercial/Industrial GWSoil PCLs at two (2) intertidal locations at concentrations of 0.82 mg/kg and 0.160 mg/kg. The majority of the remaining constituents were not detected at levels above laboratory reporting requirements.

Fifty-eight (58) sediment samples were collected and analyzed for TAL metals and TCL SVOCs from the near-shore locations. Arsenic, lead, and mercury were detected at concentrations exceeding the TRRP Tier 1 Commercial/Industrial GWSoil PCLs for soils with maximum reported concentrations of 14.3, 29.9 and 0.075 mg/kg, respectively. Barium, beryllium, and cadmium were also detected at concentrations above Tier 1 PCLs. The remaining TAL metals were either not detected or detected at concentrations below risk based levels.

For TCL SVOCs, 3,3-dichlorobenzidine was the only constituent to exceed risk-based levels. This constituent was reported at a concentration of 0.075 mg/kg, which exceeds the GWSoil PCL. The majority of the SVOC constituents were not detected at levels above laboratory reporting requirements.

A total of twelve (12) sediment samples were collected and analyzed for TAL metals and TCL SVOCs from the offshore locations. Arsenic, lead and mercury were consistently detected at concentrations exceeding the TRRP Tier 1 Commercial/Industrial GWSoil PCLs for soils with maximum reported concentrations of 8.9, 15.1, and 0.072 mg/kg, respectively. The remaining TAL metals were either not detected or detected at concentrations below Tier 1 PCLs.
For the TCL SVOCs, no constituents exceeded the comparison values. Only two constituents [benzo(a)pyrene and bis(2-ethylhexyl)phthalate] were detected above laboratory reporting limits.

Ground Water

The shallow ground water appears to be a mix of fresh and brackish water from the lake, making it unsuitable for human consumption. In addition, the ground water exists at depths where the landfill material exists. Therefore, ground water may be affected by constituents of concern from landfill wastes and not suitable for household drinking water use. Based on the high TDS concentrations, the proximity of the Site to brackish surface water, and the presence of the underlying landfill, there is no current or anticipated future use of ground water as a source of potable water at the Site.

SCOPE AND ROLE OF RESPONSE ACTION

This response action is the final site remedy and is intended to address fully the threats to human health and the environment posed by the conditions at this Site. The purpose of this response action is to implement a remedy to prevent exposure to contaminated soils and sediments and minimize future potential runoff of contaminated to that may accumulate in the Sabine Lake sediments.

SUMMARY OF SITE RISKS

A baseline risk assessment was completed to determine the current and future effects of contaminants on human health and the environment. Based on current zoning and surrounding area, future land use for the former facility will be limited to industrial and/or commercial use after completion of the remedial action. Therefore, the human health risk assessment focused on health effects for future industrial and construction workers that could result from direct contact (incidental ingestion, inhalation, and dermal contact) with on-site soils and sediments

Human Health Risk Assessment

In summary, dieldrin and heptachlor epoxide were identified as COCs in soil in the Maintenance Shed Area and the Non-source Areas, respectively. In addition, copper, zinc, and Aroclor 1242 were

identified as COCs in sediment based on protection of fish ingestion exposures. However, the modeled fish tissue concentrations used in this Human Health Risk Assessment (HHRA) are much higher than the measured fish tissue concentrations from Lake Sabine as reported by the Texas Department of Health in data collected in 1995, and therefore are overly conservative.

The following areas of potential concern were identified for the Site:

- Wastewater Impoundment Area
- Wastewater Treatment Facility
- Tar Burn Area
- Current Aboveground Storage Tank Area
- Maintenance Shed Area
- Lauren Tank Farm
- Non-Source Area

The Site shallow groundwater is not considered a potential drinking water source and does not represent an exposure pathway. Likewise, no surface water locations were identified at the Site and therefore, surface water does not represent an exposure pathway. Ground water and surface water were not evaluated in the HHRA.

The following receptors were identified and were evaluated for significant exposure pathways in the HHRA:

- Current onsite - industrial/commercial worker (Site owner), adult trespasser (although very infrequent since the Site is remote in relation to residential areas).
- Current off-site - adult or child eating fish caught in Lake Sabine.
- Future onsite - industrial/commercial worker, construction worker, and adult trespasser (although very infrequent since the Site is remote in relation to residential areas)
- Future off-site - adult or child eating fish caught in Lake Sabine.

Direct contact exposures to sediment were not quantified since there are currently no complete exposure pathways for sediment.

Chemical of Potential Concern

The following chemicals of potential concern (COPCs) were identified for soil and sediment.

Soils:

- benzo(a)pyrene
- dibenzo(a,h)anthracene
- indeno(1,2,3-cd)pyrene
- benzo(a)anthracene
- benzo(b)fluoranthene
- Aroclor-1254
- dieldrin
- p,p'-DDD
- p,p'-DDE
- p,p'-DDT
- alpha-chlordane
- heptachlor epoxide

Sediment

- Aroclor-1242
- copper
- zinc

Risk Characterization

The EPA considers two types of risk: cancer risk and non-cancer risk. Excess lifetime cancer risks that range from $1x10^{-6}$ to $1x10^{-4}$ (one-in-one-million to a one-in-ten-thousand risk) are considered by the EPA to be acceptable. Risks greater than $1x10^{-4}$ are considered unacceptable. For non-cancer risks, a hazard index less than 1 for an individual target organ or system is below the threshold for predicted health effects.

Potential excess lifetime cancer risks (ELCRs) and hazard indices (HIs) were calculated using reasonable maximum exposure (RME) assumptions for the receptors and exposure pathways identified above. The following potential risks were identified:

- Current/Future onsite Industrial/Commercial Worker - Ingestion, dermal contact, and inhalation exposures to soil COPCs in the former Wastewater Impoundment Area and former Wastewater Treatment Facility were

quantified. Risks are within acceptable levels.

- Current/Future onsite Industrial/Commercial Worker - Ingestion, dermal contact, and inhalation exposures to soil COPCs in the former Tar Burn Area, former Lauren Tank Farm Area, and Current Aboveground Storage Tank Area were quantified. Risks are within acceptable levels.

- Current/Future onsite Industrial/Commercial Worker - Ingestion, dermal contact, and inhalation exposures to soil COPCs from all non-source areas were quantified. An ELCR of 9x10-5 and HI of 2 were calculated. One COPC (heptachlor epoxide) exceeded an individual ELCR of 1x10-5 and HI of 1. Therefore, risks exceed acceptable levels and one COC (heptachlor epoxide) was identified for this receptor and exposure area. Estimated risks were also evaluated using CT exposure assumptions. An ELCR of 1x10-5 and HI of 0.9 were calculated. No COPCs exceeded an individual ELCR of 1x10-5 or HI of 1. Therefore, risks are within acceptable levels and no COCs were identified for this receptor and exposure area using CT exposure assumptions.

- Current/Future onsite Industrial/Commercial Worker #5 - Ingestion, dermal contact, and inhalation exposures to soil COPCs in the former Maintenance Shed Area were quantified. An ELCR of 2x10-4 and HI of 0.7 were calculated. One COPC (dieldrin) exceeded an individual ELCR of 1x10-5; no COPCs exceeded an individual HI of 1. Therefore, risks exceed acceptable levels and one COC (dieldrin) was identified for this receptor and exposure area. Since a COC was identified, estimated risks were also evaluated using CT exposure assumptions. An ELCR of 2x10-5 and HI of 0.4 were calculated. Dieldrin exceeded an individual ELCR of 1x10-5. Therefore, risks exceed acceptable levels and one COC (dieldrin) was identified for this receptor and exposure area using CT exposure assumptions.

- Current/Future off-site Fisher - Ingestion exposures to COPCs in sediment (bioaccumulated by fish in Lake Sabine) were quantified for an adult. An ELCR of 2x10-4 and HI of 7 were calculated. One COPC (Aroclor 1242) exceeded an individual ELCR of 1x10-5 and copper and zinc exceeded an HI of 1. Therefore, risks exceed acceptable levels and three COCs (Aroclor 1242, copper, and zinc) were identified for this receptor and exposure area. Since COCs were identified, estimated risks were also evaluated using CT exposure assumptions. An ELCR of 8x10-5 and HI of 7 were calculated. One COPC (Aroclor 1242) exceeds an individual ELCR of 1x10-5 and two COCs (copper and zinc) exceed an HI of 1. Therefore, risks exceed acceptable levels and three COCs (Aroclor 1242, copper, and zinc) were identified for this receptor and exposure area using CT exposure assumptions.

Uncertainty Assessment

Pesticides in Soil

Dieldrin and heptachlor epoxide were identified as COCs in soil. Based on knowledge of historic site operations, these chemicals may to be associated with site activities. There is uncertainty in the risk estimates by inclusion of these chemicals.

Aroclor 1242 in Sediment

Aroclor 1242 is a risk driver for sediment in the HHRA. However, there is much uncertainty in the risk calculations, primarily due to the available dataset. No source has been identified onsite. Available data from all areas of the Site indicate no detections of Aroclor 1242. Aroclor 1242 was detected in one of seven sediment samples; it was the only Aroclor detected. PCBs were not analyzed in the background sediment dataset. The fish ingestion risk calculations are based on a single, detected PCB concentration in sediments. This concentration is not expected to represent the PCB concentrations that a fish comes in contact with during its lifetime since a fish's home range is much larger than the single location. Therefore, using one location to model fish uptake is extremely conservative.

The TDH prepared a risk assessment of Sabine Lake under EPA's Near Coastal Water Grant. Although these data were gathered for a broader study, the data were reportedly collected in accordance with EPA's Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Fish Sampling and Analysis. Aroclor 1242 was not detected in fish samples.

Copper in Sediment

Copper is a risk driver for sediment in the HHRA. However, there is much uncertainty in the risk calculations because no significant source of copper has been identified onsite. The calculated HI is 2 using both reasonable maximum exposure and central tendency exposure scenarios. This level is only slightly higher than the acceptable HI of 1. The TDH prepared a risk assessment of Sabine Lake under EPA's Near Coastal Water Grant. Aquatic species were collected to represent commonly consumed edible tissue taken by the public from sample locations in Sabine Lake (South), Sabine Lake (North), and Sabine Pass. Copper was detected in 3 of the 10 fish samples. The maximum detected concentration of copper in fish tissue of 19 ppm is much lower than the modeled fish tissue concentration of 150 ppm used in the risk calculations.

Zinc in Sediment

Zinc is a risk driver for sediment in the HHRA. However, there is much uncertainty in the risk calculations because no significant source of zinc has been identified onsite. The calculated HI is 5 using both reasonable maximum exposure and central tendency exposure scenarios. This level is slightly higher than the acceptable HI of 1. The TDH prepared a risk assessment of Sabine Lake under EPA's Near Coastal Water Grant (TDH, 1995). Aquatic species were collected to represent commonly consumed edible tissue taken by the public from sample locations in Sabine Lake (South), Sabine Lake (North), and Sabine Pass. Zinc levels were detected in all 10 fish tissue samples. The maximum detected concentration of zinc in fish tissue of 344 ppm was much lower than the modeled fish tissue concentration of 4,300 ppm zinc used in the conservative risk calculations for the State Marine Site.

Ecological Risk Characterization

Hazard quotients (HQ) for ecological risk analysis were calculated by dividing exposure point concentrations (EPC) by ecological risk-based screening levels for benthic invertebrates and exposure doses by toxicological reference values for wildlife. HIs were calculated for total low molecular weight polycyclic aromatic hydrocarbons (LPAHs) and high molecular weight polycyclic aromatic hydrocarbons (HPAHs) as the sum of HQs for individual PAHs.

Terrestrial Omnivorous/Insectivorous Mammals:

The no observed adverse effect level (NOAEL)-based HQ for the white-footed mouse exceeded unity at the following locations:

- Former Wastewater Impoundments
- Wastewater Treatment Facility
- Above Ground Storage Tanks
- Maintenance Shed Area
- Tar Burn Area
- No lowest observable adverse effects level (LOAEL)-based HQs exceeded unity.
- Risk to the omnivorous/ insectivorous mammal feeding guild for the above areas lies in the risk management area between the NOAEL and LOAEL, therefore these risks was considered margin and not evaluated in the risk analysis for the Site.
- Lauren Tank Farm area exceeded NOAEL-based HQs unity for several contaminants. LOAEL-based HQs also exceeded unity for endrin aldehyde. Therefore, risk to the omnivorous/ insectivorous mammal feeding guild from endrin aldehyde was included in the risk analysis for the Site.
- Non-source Area exceeded NOAEL-based HQs unity for several contaminants. LOAEL-based HQs also exceeded unity for dieldrin, endrin aldehyde, and heptachlor epoxide. Therefore, risks to the omnivorous/ insectivorous mammal feeding guild from dieldrin, endrin aldehyde, and heptachlor epoxide were evaluated in the risk analysis for the Site.

Terrestrial Omnivorous/Insectivorous Birds:

HQs for the northern bobwhite quail exceeded NOAEL-based HQs unity for several contaminants. However, all HQs were below 10. No LOAEL-based HQs exceed unity. Therefore, the risk to the omnivorous/ insectivorous bird feeding guild lies in the risk management area between the NOAEL and LOAEL. These risks are considered marginal and were not included in the risk analysis for the Site.

Terrestrial Carnivorous Mammals:

No NOAEL-based or LOAEL-based HQs exceeded unity for the coyote. Therefore, there is no risk to the carnivorous mammal feeding guild.

Benthic Invertebrates:
Sediment concentrations from all three exposure areas in Sabine Lake were compared to primary and secondary effects levels indicative of toxicity to benthic invertebrate communities. Benthic invertebrates range from immobile to having fairly small home ranges; therefore, each exposure area was evaluated independently.

- The analysis of the Intertidal Area indicates marginal or lower risk exists for all chemicals of potential ecological concern (COPECs) except lead. The maximum magnitude of exceedance of the primary effect levels is less than 10 for all COPECs. Lead exceeded the secondary effect level. Risks to benthic invertebrates for all COPECs except lead are marginal, and were not included in the risk analyses for the Site. The risk to benthic invertebrates for lead was included in the risk analysis.
- The analysis of the Nearshore Area indicates marginal or lower risk exists for all COPECs. The maximum magnitude of exceedance of the primary effect levels is less than 10 for all COPECs. Risks for all COPECs for the Nearshore Area were not included in the risk analysis for the Site.
- The analysis of the Offshore Area indicates marginal or lower risk exists for all COPECs. The maximum magnitude of exceedance of the primary effect levels is less than 10 for all COPECs and no sample concentrations exceeded secondary effect levels. Risks to benthic invertebrates for all COPECs are marginal and were not included in the risk analysis for the Site.

Omnivorous/Insectivorous Birds:

- No NOAEL-based or LOAEL-based HQs exceeded unity for the spotted sandpiper in the Intertidal Area.
- The NOAEL-based HQs in the Nearshore Area exceeded unity for several contaminants. No LOAEL-based HQs exceeded unity.
- The combined total NOAEL-based HQs for the spotted sandpiper representing omnivorous/ insectivorous shore birds foraging in both the Intertidal and Nearshore areas exceeded unity for several contaminants. No LOAEL-based HQs exceed unity. Risks to omnivorous/ insectivorous shore birds are marginal, and were not included in the risk for the Site.

Piscivorous Birds:

- NOAEL-based HQs for the belted kingfisher from the combined Intertidal, Near Shore, and Offshore Areas exceeded unity only for zinc. No LOAEL-based HQs exceeded unity. The risk to the piscivorous bird feeding guild is considered marginal and was not included in the risk analysis.

Uncertainty Assessment
The nature and magnitude of the uncertainties depend on the amount and quality of data available, the degree of knowledge concerning site conditions and the assumptions made to perform the assessment. A qualitative evaluation of the major general uncertainties associated with this screening assessment is outlined below:

- No avian and mammalian life history data specific to the site were available; therefore, exposure parameters were either modeled based on allometric relationships or were based on data from these same species in other portions of its range. As a consequence, risk

may be either overestimated or underestimated.

- No site-specific data on concentrations in prey items were available. Therefore, concentrations in these prey items were estimated using literature-derived bioaccumulation models. As a consequence, concentrations of COPECs in actual prey may be either higher or lower than the data used in this screen.
- Literature-derived toxicity data based on laboratory studies were the only available toxicity data used to evaluate risk to all receptor groups. Consequently, the risk may be either overestimated or underestimated.
- Dietary compositions were simplified for the site receptors to estimate concentrations in food items using bioaccumulation models. It was assumed that concentrations were similar in comparable food types. Consequently, risk may be either overestimated or underestimated.
- Because toxicity data specific for bird and mammal species at the site were not available, it was necessary to extrapolate toxicity values from test species to site receptor species. As a consequence, risk may be either overestimated or underestimated.
- In this screen, risks for most chemicals were each considered independently. Because chemicals may interact in an additive, antagonistic, or synergistic manner, the evaluation of single-chemical risk may either underestimate or overestimate risk associated with chemical mixtures. The risk from PAHs and organochlorine pesticides were summed to determine the combined risk.
- Detection limits for some data were insufficient because they were greater than ecological screening values. These compounds were carried forward in the risk assessment and evaluate for effects on wildlife using 1/2 the detection limit as a proxy value for non-detects. This assumption could either under- or overestimate risk depending on the true concentration of those constituents.
- All sediment data used in the risk assessment is a minimum of four years old. The Site is located along Sabine Lake adjacent to a canal that receives regular boat traffic and is dredged every two to three years. The sediments in this area are also subject to tidal movements. Sediments located in such an active area are not likely to remain constant, and as such, the available data from are not necessarily reflective solely of site-related influence, nor are they definitively representative of existing conditions.
- There is a lack of spatial coverage for pesticide data at the Site. Pesticides were detected in some of the source areas; however, there was insufficient sample coverage to determine if a site related gradients exist. In these areas, risk could be either under or over estimated.
- Risk was not calculated for reptiles and amphibians due to insufficient toxicological data and site-specific data. Some species of omnivorous birds have similar diets to those of omnivorous reptiles and amphibians. Hence, conclusions for the omnivorous bird feeding guild were considered representative of the reptiles and amphibians likely living on the Site.
- Risk was not calculated for terrestrial plants or invertebrates. No endangered plant or invertebrate species were identified within the area. These lower trophic level organisms were not considered assessment endpoints for the Site.
- Toxicity information adequate to quantify ecological risks was not available for some detected constituents. Consequently; these constituents could not be evaluated. The uncertainty of risk to one class of receptors in these cases is reduced by the lack of quantifiable risk to the other class of organisms.
- The exposure dose estimates in this screening risk assessment assume that one hundred percent of the chemical concentrations to which receptors are exposed are in the bioavailable form. Most chemicals will not be one hundred percent bioavailable. In the cases where bioavailability is less than one hundred percent, risk is overestimated.

REMEDIAL ACTION OBJECTIVES

The Remedial Action Objectives (RAOs) are based on the future redevelopment of this Site for industrial or commercial use, protecting future industrial workers and construction workers, and ecological receptors. Although future planned industrial use will likely not support ecological habitat, ecological risks may be a factor. The preliminary remedial action objectives for the SMS:

- Prevent exposure to contaminated soil/sediment via ingestion, inhalation, or dermal contact that would result in an excess carcinogenic risk of 1 x 10-5 or a hazard index (HI) of 1.
- Prevent exposure of contaminated soil/sediment to aquatic or terrestrial organisms via direct contact or indirect ingestion of bioaccumulative chemicals that would result in a hazard quotient of 1.
- Prevent or minimize migration of soil contaminants to ground water.
- Prevent or minimize further migration of soil and sediment contaminants to surface water that could result in exceedance of ambient water quality criteria.

Preliminary Remediation Goals

Preliminary Remediation Goals (PRGs) were developed for COPCs and exposure areas where the total risk for a receptor exceeded 1x10-5 or an HI of 1. The target risk levels used to develop the PRGs were an ELCR equal to 1x10-5 and an HI of 1.

- Maintenance Shed Area - A PRG of 1.2 mg/kg for dieldrin was identified for protection of ingestion, dermal contact, and inhalation exposures to soil by current and future industrial/commercial workers. Concentrations in two samples collected from this area exceed the PRG.
- Non-Source Areas - A PRG of 2.1 mg/kg and HI less than 1 for heptachlor epoxide was identified for protection of ingestion, dermal contact, and inhalation exposures to soil by current and future industrial/commercial workers. Concentration in one sample collected from this area exceeds the PRG.
- Sediments in Lake Sabine - A PRG was identified for protection of exposures to Aroclor 1242, copper, and zinc in edible fish tissue by current and future receptors eating fish caught in Lake Sabine. The PRG of 1.5x10-4 mg/kg for Aroclor 1242 is based on a 1x10-5 ELCR for this receptor. The detected concentration of Aroclor 1242 in one sample collected from sediment exceeds the PRG. The PRGs of 91 and 734 mg/kg for copper and zinc, respectively, are based on a HI of 1 for this receptor. Concentrations in four and two locations, respectively, exceed the PRGs for copper and zinc.

SUMMARY OF REMEDIAL ALTERNATIVES

Remedial alternatives were developed to address the remedial action objectives and goals for the Site soils and sediments.

Soil Alternatives

Alternative 1: No Further Action
Estimated Capital Cost: $0
Estimated Annual O&M Costs: $0
Estimated Present Worth (7%): $0

Regulations governing the Superfund program, 40 C.F.R. § 300.430(e)(6) require that the "no action" alternative be evaluated at every Site to establish a baseline for comparison. Under this alternative, there would be no additional remedial actions conducted at the Site to control the continued release of COCs.

Alternative 2: Institutional Controls
Estimated Capital Cost: $182,000
Estimated Annual O&M Costs: $7,000
Estimated Present Worth (7%): $343,000

The objectives of institutional controls are to prevent direct exposure to the contaminated soils. Institutional controls would consist of access and deed restriction for the areas exceeding PRGs. A restrictive fence would be placed to provide access restrictions. A statement would be added on the deed of the property identifying the area and specifying the following:

- Excavation within the area must comply with Occupational Safety and Health Act (OSHA)

requirements for health and safety protection
- Any excavated soils should be managed as either solid or hazardous waste in accordance with applicable laws
- Buildings are not permitted within the contaminated soil area
- Shallow ground water, if it is available, may not be used
- Future land use will be limited to commercial or industrial uses

The time to implement this remedy is approximately one month.

Alternative 3: Onsite Soil Cover
Estimated Capital Cost: $784,000
Estimated Annual O&M Costs: $17,000
Estimated Present Worth (7%): $1,203,000

This alternative consists of a clean soil cover used in conjunction with grading and vegetative cover over the three soil hot spot areas. A total area of approximately 53,600 square feet will be covered assuming a minimum overlap of 10 feet beyond the limits of the contaminated soil hot spot areas. The soil cover consists of the following components:

- Separation geotextile
- 24-inch layer of compacted clay
- 6-inch layer of topsoil
- Vegetative cover

After removing existing vegetation and grading, a separation geotextile would be placed over the prepared sub-grade to provide a visual delineation between contaminated soils and the clean soil cover. The clay cover would be placed and compacted to a minimum thickness of 24-inches. A 6-inch topsoil layer would be placed to support the vegetative cover.

The cover system would be designed to reduce infiltration to ground water to minimize the potential for further migration of COCs to shallow ground water. Following construction, the condition of the soil cover system will be visually monitored annually as part of the O&M plan.

The time to implement this remedy is expected to be approximately 6 months.

Alternative 4: Excavation, Treatment and Offsite Disposal
Estimated Capital Cost: $1,881,000
Estimated Annual O&M Costs: $17,000
Estimated Present Worth (7%): $2,431,000

The excavation, treatment (if needed), and off-site disposal alternative consists of excavating contaminated soils that exceed PRGs within the three soil hot spot areas. The major remedial components of this alternative include the following:

- Excavation of soils containing COCs that exceed PRGs.
- Backfill of the areas excavated with clean, low permeability soil to meet landfill cover requirements
- Ex situ treatment (on or offsite as appropriate) to meet land disposal restrictions (if needed)
- Off-site disposal of removed/treated material

This alternative will meet the cleanup objectives by removing the soil with contaminant concentrations exceeding PRGs. The area to be excavated is defined by the limits of excavation shown on Figure 3-3. This alternative will include removal of soil overlying the landfill waste, which is estimated at an average thickness of 2 feet. It is assumed that excavation will not proceed into the landfill waste. The approximate (in place) volume of soil to be disposed off-site is assumed to be 2,750 cubic yards. Confirmatory sampling will be conducted to minimize the excavation area; however, confirmatory samples will not be collected within the underlying landfill waste. Excavated soils exceeding the PRGs will be sampled and analyzed for TCLP parameters. Soils not failing TCLP will be disposed at an off-site facility. Soils exceeding TCLP limits will be treated prior to off-site disposal.

After completion of excavation, a soil backfill and cover system will be constructed to meet landfill cover requirements. Since contaminated soils are removed, minimal overlap of the cover area would be required beyond the limits of the soil hot spot excavation areas. A total area of approximately 39,200 square feet will be covered.

The time to implement this remedy is expected to be 6

to 9 months.

Sediment Alternatives

Alternative 1: No Further Action
Estimated Capital Cost: $0
Estimated Annual O&M Costs: $0
Estimated Present Worth (7%): $0

Regulations governing the Superfund program, 40 C.F.R. § 300.430(e)(6) require that the "no action" alternative be evaluated at every site to establish a baseline for comparison. Under this alternative, there would be no additional remedial actions conducted at the site to control the continued release of COCs.

Alternative 2: Monitored Natural Attenuation
Estimated Capital Cost: $68,000
Estimated Annual O&M Costs: $6,000
Estimated Present Worth (7%): $286,000

The objectives of this alternative are to prevent direct exposure to the contaminated sediments while the natural attenuation process occurs. Natural attenuation relies on natural physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil, sediment or ground water. These in situ processes include bio-degradation; dispersion; dilution; sorption; volatilization; chemical or biological stabilization, transformation, or destruction of contaminants. For sediment, continuing deposition of clean sediment on top of contaminated sediments would limit direct contact to contaminated sediments. This mechanism is particularly relevant to the State Marine Site due to the close proximity of the Sabine-Neches Canal which is routinely dredged. The major components of this alternative are:

- Review of existing characterization data and collection of additional site characterization data to adequately define the nature and extent of sediment contamination to establish a baseline from which to evaluate the degree to which natural attenuation is occurring
- Performance monitoring to assess the effectiveness of natural attenuation processes over time.

Existing site characterization would need to be supplemented to further delineate the sediment hot spots. Additional sampling would be conducted to determine the areal extent of the hot spot as well as performing site specific bioassays. Once the current nature and extent of COCs is adequately defined, performance monitoring would be conducted to assess the rate at which natural attenuation processes are achieving remedial action objectives. The performance monitoring would include annual sampling events for the first 5 years, and could include follow up events less frequently until PRGs are achieved.

Alternative 3: Excavation, Treatment and Offsite Disposal
Estimated Capital Cost: $1,360,000
Estimated Annual O&M Costs: $0
Estimated Present Worth (7%): $1,524,000

The excavation, treatment, and off-site disposal alternative consists of excavating sediments with contaminant concentrations that exceed PRGs within the sediment hot spot areas. The major remedial components of this alternative include the following:

- Excavation of sediments containing COCs that exceed PRGs
- Sediment de-watering
- Ex situ treatment to meet land disposal restrictions
- Off-site disposal

This alternative will meet the cleanup objectives by removing the sediment with contaminant concentrations exceeding PRGs. This alternative will include removal of sediment to an assumed depth of 1 foot. The approximate volume of sediment to be disposed off-site is assumed to be 800 cubic yards. Excavation of sediment would be accomplished by barge or pontoon mounted mechanical excavation equipment (track-hoe or back-hoe). Excavation of sediments would require installation of a containment area to isolate remedial actions from the surrounding surface water for turbidity/re-suspension management. The containment area would consist of installing a floating turbidity screen around the work area, and

may require double containment through use of a turbidity screen curtain if site-specific conditions require an added measure of protection. Excavated sediments exceeding the PRGs will be sampled and analyzed for TCLP parameters. Sediments not failing TCLP will be disposed at an off-site facility. Sediments exceeding TCLP limits will be treated prior to off-site disposal.

The time to implement this remedy is expected to be 6 to 9 months.

EVALUATION OF ALTERNATIVES

Nine criteria are used to evaluate the different remediation alternatives individually and against each other in order to select a remedy. The nine evaluation criteria are (1) overall protection of human health and the environment; (2) compliance with ARARs; (3) long-term effectiveness and permanence; 4) reduction of toxicity, mobility, or volume of contaminants through treatment; (5) short-term effectiveness; (6) implementability; (7) cost; (8) State/support agency acceptance; and (9) community acceptance. This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. The nine evaluation criteria are discussed below. The "Detailed Analysis of Alternatives" can be found in the FS.

1. **Overall Protection of Human Health and the Environment** *determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.*

The No Further Action Alternative does not provide protection of human health or environment. The Institutional Controls Alternative provides some protection for human health but no protection for the environment. The Soil Cover Alternative provides adequate protection by eliminating the direct contact pathway and mobility. The Excavation Alternative provides the highest level of protection for human health and the environment by removing COCs from the Site and treating (if needed) them to meet LDRs, and provides clean cover over the existing landfill waste under the soil remedy.

2. **Compliance with ARARs** *evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the Site or whether a waiver is justified.*

No Further Action and the Institutional Controls Alternatives do not comply with ARARs. The Soil Cover and Excavation Alternatives comply with ARARs.

3. **Long-term Effectiveness and Permanence** *considers the ability of an alternative to maintain protection of human health and the environment over time*.

The No Further Action Alternative does not provide long term effectiveness or permanence. The Institutional Controls Alternative provides minimal effectiveness for human health, but no effectiveness for ecological receptors (environment). The Soil Cover Alternative provides long term effectiveness and permanence provided operations and maintenance are ongoing. The Excavation Alternative provides the highest degree of effectiveness and permanence due to the removal (and treatment if needed) of COCs.

4. **Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment** *evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.*

The No Further Action and Institutional Controls Alternative do not reduce TMV. The Soil Cover Alternative reduces mobility. The Excavation Alternative reduces mobility and toxicity, but could increase volume if treatment is implemented.

5. **Short-term Effectiveness** *considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.*

The Institutional Controls Alternative provides minimal effectiveness. The Soil Cover Alternative easily mitigates risks to workers and the community and achieves RAOs in a short time. The Excavation Alternative easily mitigates risks to workers and the

community and achieves RAOs in a short time, but increases risk due to off-site transportation of contaminated materials and provides a slightly higher risk to workers during construction than capping.

6. **Implementability** *considers the technical and administrative feasibility of implementing the alternative such as relative availability of goods and services.*

The Institutional Controls Alternative is easily implemented. The Soil Cover Alternative is easily implemented using standard construction methods. The Soil Excavation Alternative is easily implemented using standard construction methods. This alternative is somewhat more complex than capping due to the existence of landfill waste and may require treatment of hazardous materials prior to off-site disposal. The Sediment Excavation Alternative is most difficult to implement due to in-water construction.

7. **Cost** *includes estimated capital and operation and maintenance costs as well as present worth costs. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.*

Capital Costs for Soil alternatives evaluated range from $560,000 to $2,458,000.
Capital Costs for Sediments alternatives evaluated range from $429,000 to $1,471,000 .

8. **State/Support Agency Acceptance** *considers whether the State agrees with U.S. EPA's analyses and recommendations of the RI/FS and the Proposed Plan.*

TCEQ and the Federal and State Natural Resource Trustee have been provided the opportunity to review the RI/FS reports and Proposed Plan and their support for the preferred alternative will be evaluated during the public comment period.

9. **Community Acceptance** *considers whether the local community agrees with U.S. EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.*

Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the Record of Decision for the Site.

SUMMARY OF THE PREFERRED ALTERNATIVE

The preferred remedial alternative for site soil is **Alternative 4, Excavation, Treatment and Offsite Disposal.** This alternative best meets the cleanup objectives by removing contaminated soils with concentrations exceeding PRGs from the Site. Alternative 4 provides the highest degree of effectiveness and permanence due to the removal (and treatment if needed) of COCs. This alternative reduces mobility and toxicity at the Site by removing and disposing of contaminated materials at an off-site landfill. Although the soil alternative has the highest costs, very conservative estimates were made in the estimated volume of materials that would require excavation. Additionally, conservative assumptions were made regarding materials requiring treatment and disposal in a hazardous waste landfill. Alternative 4 includes removal of soil to an estimated depth of two (2) feet. The approximate (in place) volume of soil to be disposed off-site is assumed to be 2,750 cubic yards. Excavated soils exceeding the PRGs will be sampled and analyzed for TCLP parameters. Soils not failing TCLP will be disposed at an off-site facility. Soils exceeding TCLP limits will be treated prior to off-site disposal.

Alternative 4 offers the best permanent protection for human health and the environment by removing contaminated soils from the Site that pose a risk to human health and prevents runoff of contaminated soils to the sediments in Sabine Lake.

The preferred remedial alternative for Site Sediments is **Alternative 2, Monitored Natural Attenuation.** While this alternative does not remove contaminated sediments from the Site, it provides long term protection to ecological receptors through natural attenuation of contaminated sediments. Excavation and removal of contaminated site soils will prevent further accumulation of contaminated sediment and

help accelerate the attenuation process. Excavating contaminated sediments could result in damaging ecological receptors and their environment and cause more harm than the benefit that the excavation remedy provides.

The preferred alternatives can change in response to public comment or new information.

For specific information about the State Marine Site or the Superfund process, please contact:

Carlos A. Sanchez.
Remedial Project Manager
EPA Region 6 (6SF-A)
1445 Ross Avenue
Dallas, Texas 75202-2733
(214) 665-665-8507 or 1-800-533-3508 (Toll-free)

Inquires from the news media are to be directed to Dave Bary, U.S. EPA Region 6 Press Office, at (214) 665-2208.

The local Information Repository containing the RI/FS and other Site documents is located at:

Port Arthur Public Library
4615 9th Avenue
Port Arthur, Texas 77642
(409) 985-8838

On the Web
On the internet, information about U.S. EPA and the Superfund Program can be found at:

U.S. EPA Headquarters: http://www.epa.gov
U.S. EPA Region 6: http://www.epa.gov/region6
U.S. EPA Region 6 Superfund Program:
http://www.epa.gov/region6/superfund

Call U.S. EPA at 1-800-533-3508 to receive a Spanish translation of this fact sheet.

* * *

Para recibir una traducción en español de esta Hoja de Datos, comunicarse con la Agencia de Protección del Medio Ambiente de los EEUU (la EPA) al número de teléfono 1-800-533-3508.

GLOSSARY OF TERMS

Administrative Record - All documents which the EPA considered or relied upon in selecting the response action at a Superfund site, culminating in the Record of Decision for a Remedial Action or, an Action Memorandum for a Removal Action.

Human Health Risk Assessment (HHRA) - Estimates the current and possible future risks if no action were taken to clean up a site. The EPA's Superfund risk assessors determine how threatening a hazardous waste site is to human health and the environment. They seek to determine a safe level for each potentially dangerous contaminant present (e.g., a level at which ill health effects are unlikely and the probability of cancer is very small). Living near a Superfund site doesn't automatically place a person at risk, that depends on the chemicals present and the ways people are exposed to them.

Ecological Risk Assessment - A process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more chemical, physical, or biological stressors.

Feasibility Study (FS) - A detailed evaluation of alternatives for cleaning up a site. A FS is usually performed concurrently with the Remedial Investigation.

Five-Year Reviews - A review generally required by statute or program policy when hazardous substances remain at a site above levels which permit unrestricted use and unlimited exposure. Five-Year Reviews provide an opportunity to evaluate the implementation and performance of a remedy to determine whether it remains protective of human health and the environment. Reviews are performed five years following the initiation of a Superfund response action, and are repeated every succeeding five years so long as future uses at a site remain restricted.

Ground Water - Water found beneath the ground surface that fills pores between soil, sand, and gravel particles to the point of saturation. When it occurs in a sufficient quantity and quality, ground water can be used as a water supply.

Institutional Controls (ICs) - Non-engineered instruments, such as administrative and/or legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of a remedy. ICs work by limiting land or resource use and/or by providing information that helps modify or guide human behavior at a site. Some common examples of ICs include zoning restrictions, building or excavation permits, well drilling prohibitions, and easements or covenants.

Microgram per Deciliter (µg/dL) - Units of measure used to express the concentrations of metals (e.g., lead) or organics in liquids.

Milligram per Kilogram (mg/kg) - Units of measure used to express the concentrations of metals (e.g., lead) or organics in soil or sediments. As an example, one mg/kg of lead in soil would be equivalent to one cent in $10,000.

National Priorities List (NPL) - The EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term Remedial Action (RA) under Superfund. A site must be on the NPL to receive money from the Trust Fund for a RA. The NPL is based primarily on the score a site receives from the Hazard Ranking System. The EPA updates the NPL at least once a year.

Potentially Responsible Parties (PRP) - Any individual or company, including owners, operators, transporters or generators, who is potentially responsible for, or contributing to a spill or other contamination at a Superfund site.

Record of Decision (ROD) - The final Remedial Action plan for a site. The purpose of the ROD is to document the remedy selected, provide a rationale for the selected remedy, and establish performance

standards or goals for the site or the operable unit under consideration. The ROD provides a plan for site design and remediation, and documents the extent of human health or environmental risks posed by the site or operable unit. It also serves as legal certification that the remedy was selected in accordance with the requirements of the Superfund statute and regulations. The ROD is one of the most important documents in the remedy selection process, because it documents all activities prior to selection of a remedy and provides a conceptual plan for activities subsequent to the ROD.

Remedial Investigation (RI) - An investigation to determine the nature and extent of contamination at a site. The scope of an RI can vary widely from a small specific activity to a complex study. The next, or concurrent step, following an RI is a Feasibility Study.

Removal Action - An action based on the type of situation, the urgency and threat of the release or potential release, and the subsequent time frame in which the action must be initiated. The Removal Actions for the State Marine Superfund Site consisted of "time-critical" Removal Actions where the EPA determined, based on the evaluation of the Site, that a Removal Action was appropriate to contain and/or prevent release of contaminants that pose a risk to human and the environment.

Responsiveness Summary - A summary of oral and/or written public comments received by the EPA during a public comment period on key EPA documents, such as the Proposed Plan for the State Marine Site, and the EPA's response to those comments. A responsiveness summary is included in the Record of Decision for a site.

ATTACHMENT 1
COMMENT SHEET

Your comments on the Proposed Plan for the State Marine Superfund Site are important to the EPA and the TCEQ and will help us evaluate EPA's preferred alternative for the State Marine Site. You may use the space below to write your comments. Use additional sheets if necessary. Please mail your comments to:

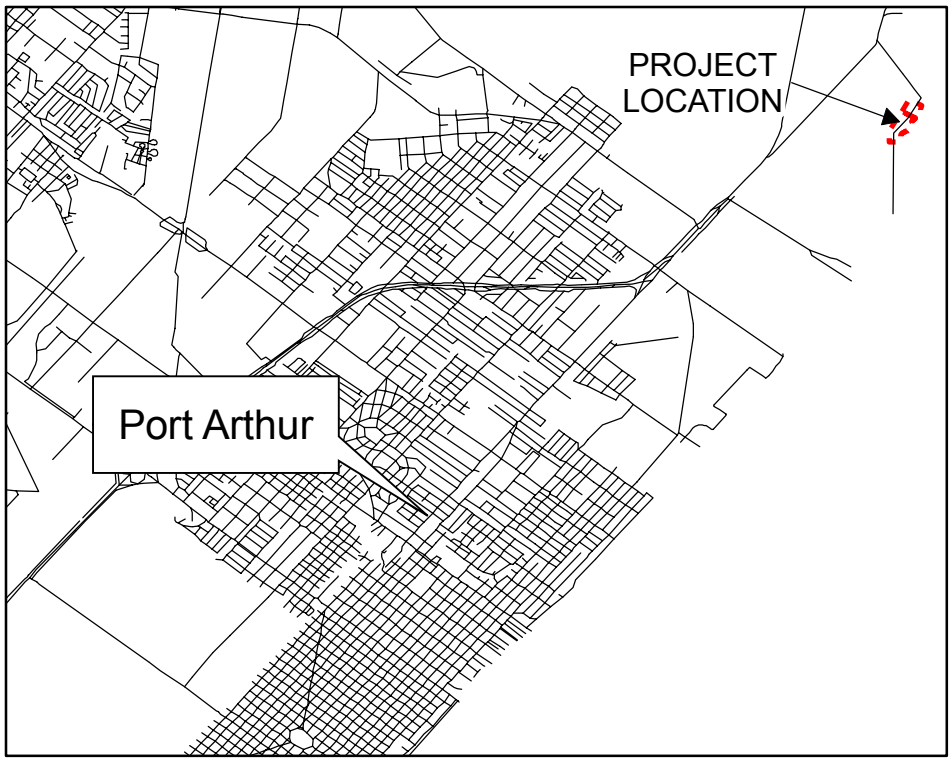
Carlos A. Sanchez, Remedial Project Manager
U.S. Environmental Protection Agency; Superfund Division (6SF-A)
1445 Ross Avenue, Suite 1200; Dallas, TX 75202-2733

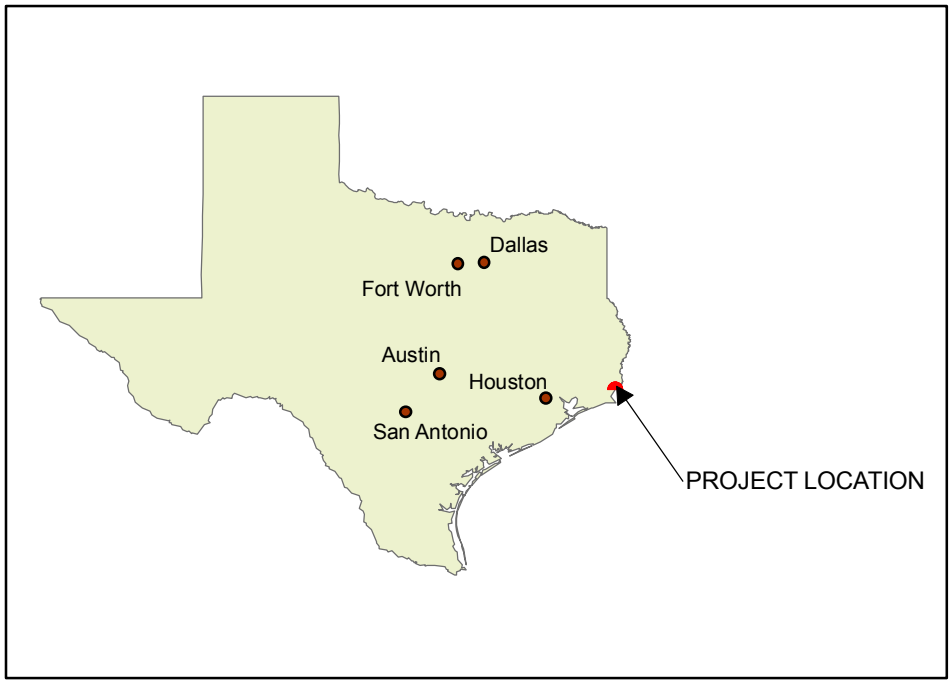
Your comments **must** be postmarked **on or before August 25, 2005**, the end of the 30-day public comment period. You may also provide oral or written comments during the scheduled public meeting announced in this Proposed Plan. Those with computer communications capabilities may submit their comments to the EPA via the internet at "sanchez.carlos@epa.gov" (without quotation marks). The EPA will respond to all significant comments in a "Responsiveness Summary" that will be included with the Record of Decision, identifying the Selected Remedy, for the Site. If you have any questions about the comment period or the State Marine Site, please contact Carlos A. Sanchez at (214) 665-8507 or the EPA's toll-free number at 1-800-533-3508.

Name:_____ Address:_____

City:_____ State:_____ Zip Code:_____

Telephone No.:_____ E-Mail Address:_____





LEGEND

- Property Boundary
- Streets

N

200 100 0 200

SCALE IN FEET

Figure 1-1
Site Location Map

State Marine
Superfund Site

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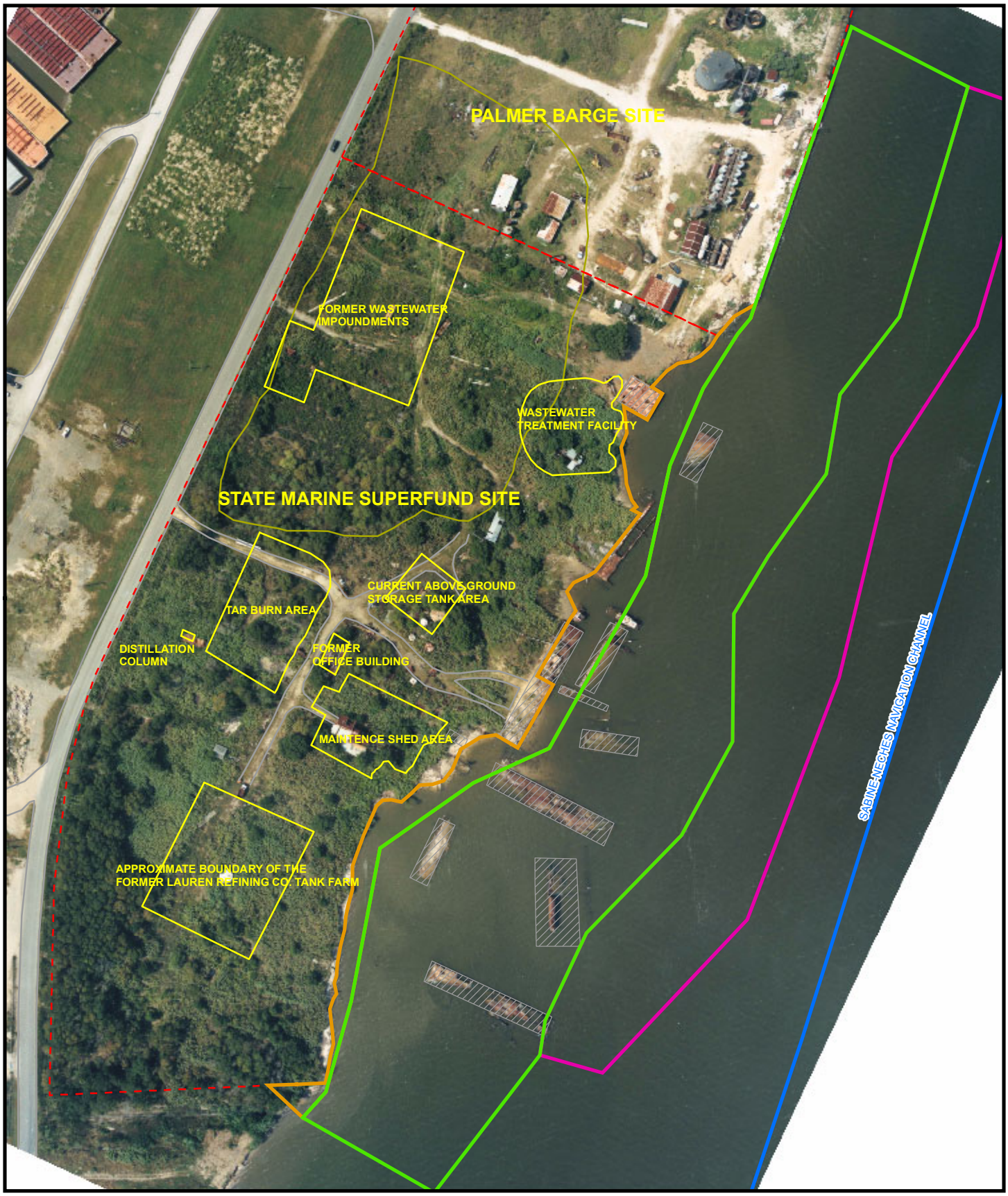

LEGEND

- Area of Interest
- Landfill Area
- Property Boundary
- Road
- Navigation Channel
- Sunken Barge
- Intertidal Area
- Nearshore Area
- Offshore Area

N

200 100 0 200

SCALE IN FEET

Figure 1-2
1998 Aerial Photograph
Current Site Features Map

State Marine
Superfund Site

CH2MHILL

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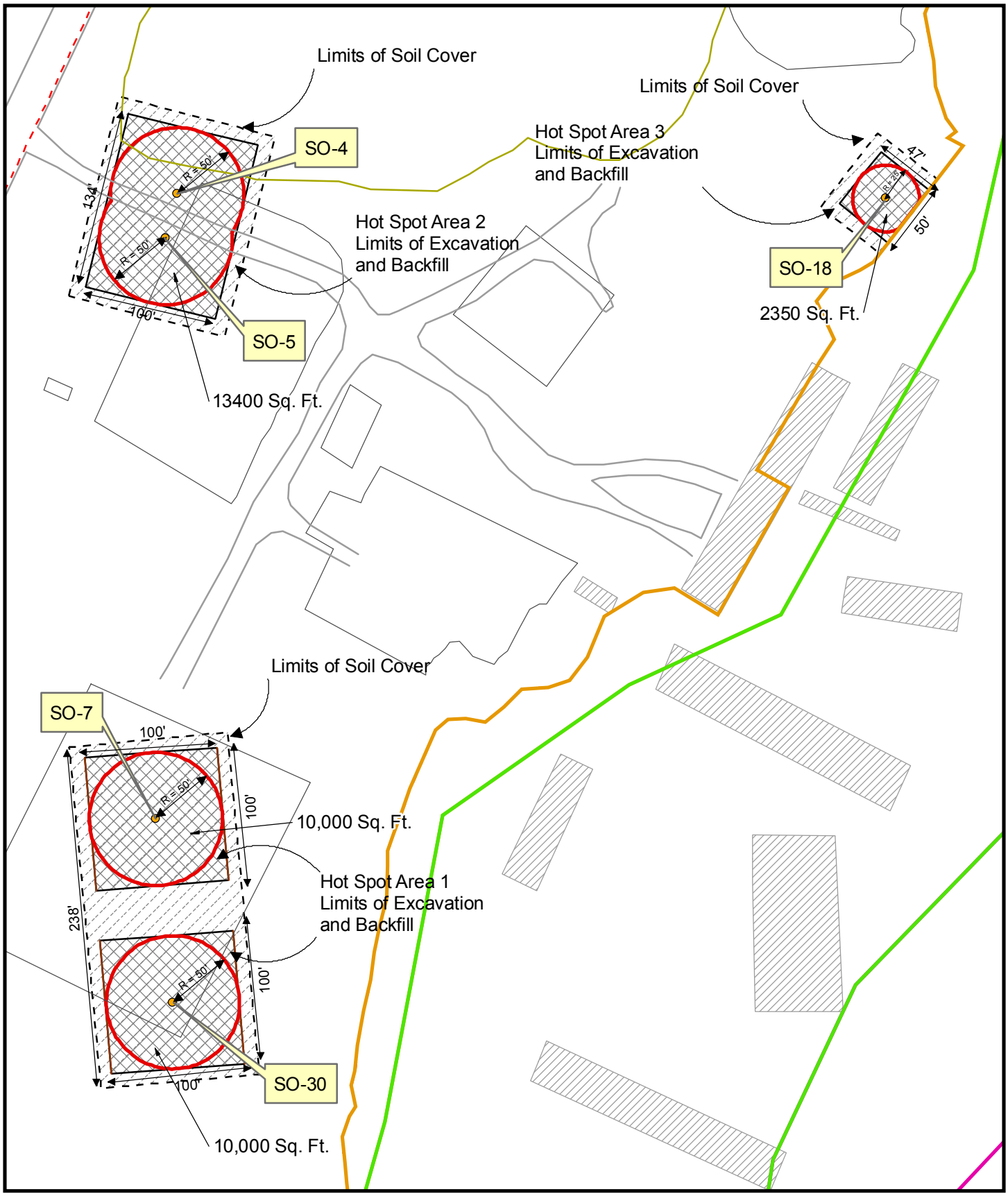

Figure 3-3
Alternative A-4:
Excavation/Treatment/
Off-Site Disposal Plan
State Marine
Superfund Site

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